and about their sinuous margins winds terrace upon terrace broadening up to the plateau on which, some forty yards from the sea, the sanatorium stands, sheltered behind to the north by the mass of Monte Pellegrino. Of this great and splendid curehouse, Professor Cervello is the physician in chief, and Baron Fassini, whose charming qualities as a host endear him to his guests, is the director. The most perfect modern systems of cure have been studied in Germany and elsewhere by Professor Cervello, whose dietetic regulations will be rendered less oppressive by the ministrations of a first-rate French chef, and whose draughts of fresh air will be administered to those who desire it in a beautiful yacht of 300 tons, which is always to be at the call of the patient. In Palermo Commendatore Florio himself, the Messrs. Whittaker and other residents did their utmost by brilliant hospitality and constant kindness to make the visit of the English physicians and their friends a memorable one; and not the least delightful of their memories will be that of the sanatorium and its grounds illuminated by myriads of lamps and hundreds of men with torches as they steamed away from the harbor on the night of their departure.

It is urged on behalf of the Villa Igiea that Palermo is the nearest place to the Continent of Europe where so delightful a climate is to be had, where there are so many resources for quiet cheerfulness and so much charm for the eye and imagination. But it is needless to add that residence in a fairy place, with a French cook and a yacht at command, can be no cheap cure. The sanatorium when finished will accommodate about 100 patients, who must necessarily belong to the wealthiest class of society.

In respect of finance I must add that Commendatore Florio did not issue his generous invitation with any eye to commercial advertisement. He has built the Villa Igiea with no intention of personal profit; after providing a fund for repairs and contingencies, all surplus is to be set aside for building a sanatorium or sanatoriums for the poor. He was also wishful that English physicians should see at work a method of inhalation of the vapor of formaldehyd which Professor Cervello believes will prove a very valuable ally in his treatment of pulmonary phthisis. This method the Professor has used for some time in the consumption wards of his hospital with, as it appears to him, satisfactory results. Whether this method turns out to be valuable or not, and this time only can show, there can be no doubt even now that the Villa Igiea offers incomparable advantages as a sanatorium for the modern system of cure of the most grevious of all pests of man.

SCIENTIFIC BOOKS.

Social Laws. An Outline of Sociology. By G. Tarde. Translated from the French by Howard C. Warren, Assistant Professor of Experimental Psychology in Princeton University, with a preface by James Mark Baldwin. New York, The Macmillan Company. 1899. Small 8°. Pp. xii + 213.

This little book consists of a collection of lectures delivered by M. Tarde at the *Collège Libre des Sciences Sociales* in Paris during the month of October, 1897. The French edition appeared in 1898 under the title, *Les Lois Sociales; Esquisse d'une Sociologie.* It has now come forth very opportunely in an English dress, which enables those who do not keep a close watch for important contemporary foreign literature to acquaint themselves with the views of one of the leading thinkers of our time. It does not claim, as the author is at pains to say, to give a summary of his three principal works, The Laws of Imitation, Universal Opposition, and Social Logic, but rather to show what there is in common in these works, and how they together constitute a system of social philosophy.

There is one respect in which Tarde may be

compared with Malthus. Each, in studying man and society, arrived at a biologic law applicable to both man and the organic world below man. There is, however, this difference, that while Malthus discovered a law of biology that had not as yet been recognized by biologists, Tarde has discovered a law well known to biologists, but scarcely as yet recognized as a law of sociology. Another difference is that the Malthusian law, while it holds universally in the animal world and is true of man as an animal, is not true of rational man, having been superseded by the law of mind, which has inaugurated a new dispensation; whereas the Tardean law, if we may so speak of it, is as true of the rational man as of the animal man and the animal, and, broadly interpreted, takes in the inorganic as well as the organic world. This Tarde has perceived, and he expresses it in this book in the following words: "The time has come when it would be in place to set forth the general laws governing imitative repetition, which are to sociology what the laws of habit and heredity are to biology, the laws of gravitation to astronomy, and the laws of vibration to physics" (p. 61). Nor is this the first time that he has said such things. Sweeping comparisons of the kind are frequent in the works named. We may refer especially to the footnote on page 37 and the discussion on page 159 of the second edition of the *Lois de l'Imitation.*

What, then, is this Tardean law? Most readers have become familiar with the five leading terms of Tarde's philosophy: Imitation, Repetition, Opposition, Invention, and Adaptation. The one most dwelt upon is *imitation.* Next to this *invention* has come to be recognized as having been given a special meaning by Tarde. We read less about *repetition* and *opposition* in their new rôles, while *adaptation* scarcely receives any amplification at Tarde's hands.

First, then, as to *imitation* as a social law. That men have always imitated one another, especially in what they deemed good, is, of course, well known, but it had not been perceived that this is the basis of all custom, of all morals, and of the social order. Imitation is specially characteristic of the lower races and of the higher animals. The first of these facts is a common remark of travelers and ethnographers. The second is attested by language itself, the word for *ape* in most languages being that for mimicry. In the development of mind imitation is the natural and necessary precursor of imagination, and all early art consists in mere copying. Who has not noted the slavish conventionalism of aboriginal and even civilized art patterns? Below the psychic plane and in the simple world of life, the homologue of imitation is clearly *heredity, i. e.*, reproduction of what already exists. But this is only transmission from one body to another. The same process is going on within the organic body. Here it takes the name of *nutrition*, and growth itself is a form of imitation. Below the life plane and throughout the inorganic world something very similar takes place. Here it is simply *impact*, producing motion, and the physical homologue of imitation is *causation.* Imitation is the universal conservative principle of nature.

Repetition is included in imitation. It is the mechanical effect of which imitation is the physical cause. It results whether the force behind it be psychic, vital, or physical. It is therefore rather an accessory term expressing the necessary consequence of imitation than a new coördinate fact in Tarde's system.

Opposition is the resistance with which the effort to repeat, reproduce, and perpetuate constantly meets from the impinging environment. It is, as Tarde says, 'universal.' In human society it embraces not only the conflicts with the elements and with wild beasts, but the far more formidable conflicts among races and nations—*bellum omnium contra omnes.* It is also oppression and revolution, monopoly and competition, and the strife of capital and labor. In the organic world it is nothing short of the universal 'struggle for existence,' so clearly set forth by Darwin. In a word, it represents the environment. In the physical world it is the innumerable obstructions in the path of every moving body, producing collisions and arresting, deflecting, constraining, and transmuting motion.

Invention is the first step in advance. It is not universal, but appears sporadically. It is

well described by Tarde in the following passage: "Social transformations are explained by the appearance, to a certain extent accidental as regards time and place, of certain great ideas, or rather by a considerable number of ideas, small or great, easy or difficult, usually unperceived at their origin, rarely brilliant, generally anonymous, but ideas always new, and which, by reason of this newness, I will allow myself to baptize collectively as *inventions* or *discoveries*" (Lois de l' Imitation, p. 2).

Invention breaks away from the bonds of imitation. Instead of exact repetition and reproduction of the old pattern it adds something, however little, to it, and this in the direction of improvement. This is a permanent gain, because the improved state immediately becomes in turn the subject of imitation. The word invention is given the greatest possible latitude. It embraces everything that departs in the least from the strict line of exact reproduction and perpetuation of the existing type. A thousand causes lead to it. Tarde has not worked these out as well as he might. Necessity may have been the primordial mother of invention as a condition to further existence. But with the growth of mind a certain degree of nonconformism naturally arose. The obstacles to the satisfaction of desire (opposition) bred discontent and induced efforts to overcome them. Mind is the naturally aberrant element in the world, and deviations from the straight path of custom resulted. At long intervals, few and far between, even as now, the inventors, *i. e.*, the innovators, made their appearance, with the results described by Tarde.

What, now, is the relation of invention to imitation and opposition? It is the product of the joint action of both of these. We saw that imitation and repetition constitute causation in the domain of thought and ideas, also in that of life. They are the *force* at work in these fields. They are the *causa efficiens*, the *vis a tergo*, that propels the vital and psychic worlds. As such they obey the Newtonian law, and the motion resulting is in straight lines. Cause and effect are in intimate contact, and this repetition, or rectilinear motion is simply continuance, *i. e.*, *continuity*. But opposition interferes with this, tends to arrest motion, constrains and transmutes it. So far the process is *genetic*. But mind is *telic*. It is a *final cause*. It was developed as a means of overcoming opposition, of surmounting obstacles, of avoiding resistance, and of circumventing counter-forces, in order to attain foreseen ends. This is the essence of invention, which is therefore born of the repetitive *nisus* in conflict with the obstructive environment, *i. e.*, of imitation and opposition.

As invention seems to be wholly the product of the higher mind and late in origin, it might be supposed that, unlike imitation, repetition and opposition, it would have no homologue in the animal world or on the plane of mere vital existence, and still less in the field of purely physical phenomena. Not so, however. Just as in the organic world, heredity is the homologue of imitation, and environment is the homologue of opposition, so *variation*, the product of heredity and environment, is the homologue of invention, the product of imitation and opposition. Dropping now into the physical world, where, as we saw, causation is the homologue of imitation, and collision is the homologue of opposition, we see that the product of these is *evolution*, which is therefore the true cosmic homologue of invention.

Adaptation, as the final great social law, is perhaps more fully treated in this little book than in any of Tarde's previous volumes. He devotes the third and last chapter to it, occupying 58 pages of the English text. And yet this is the least satisfactory part of Tarde's system thus far. This is not because it is not equally important, but because it is not set forth with anything like the originality and power that characterize his treatment of the other great laws. This is perhaps partly because he found the field thoroughly worked over by the biologists, and there is so little new in sociological adaptation. But he says justly that adaptation "expresses the profoundest aspect under which science views the universe." He perceives that it is a progressive coördination of social phenomena, and in a sense a synthesis of repetition and opposition, just as in biology it is a development as the result of a synthesis of heredity and environmental resistance. But he does not work out the mode of operation of this law in a way analogous to that in which Darwin worked

it out in biology, nor does he give us the sociological equivalent of natural selection, philosophically expressed by Herbert Spencer in the phrase 'indirect equilibration.' Adaptation is an indirect social equilibration, the complete analysis of which remains to be made. Tarde, indeed, dwells on the fact that adaptation consists in a certain harmony and unity in the social world, from which it is clear that he sees the dependence upon it of the social order. Between adaptation and invention, in Tarde's wide use of both terms, we have an antithesis which in its essential aspects is the same as the antithesis between order and progress. It is just here that sociology naturally falls into the two great subdivisions of social statics and social dynamics.

It may be objected to the above analysis that it does not follow closely enough the method of the work under review, and that it goes back to the author's other works and even lays the conceptions of other authors under tribute. But this could scarcely be avoided in anything beyond pure exposition. As a matter of fact very little is said in this book of the great law of invention. But how could this be avoided in any glance at his system? The aim has been rather to summarize that system and present it as a whole, while laying special stress, as Tarde claims to do in this work, on the relations that the leading laws sustain to one another. But the system is a large one. It is thoroughly elaborated in a long series of books, and different readers may see many things very differently. Again, the excessive condensation necessary to a short review compels the omission of so many important things that no claim is made to having done justice to that system.

The English text forms a neat and convenient little volume, printed in clear type and tastefully brought out. The translation is free and the original is rendered in elegant English without obscurities or gallicisms. In a few cases it is open to the charge of being just a little too 'liberal.' Only one such need be referred to. On page 168 the original: "Et ce cas tend à se généraliser par les progrès de la machinofacture," is rendered by: "And this sort of case tends to become more general with the improvements in the manufacture of machinery." Aside from the fact that this does not convey the idea of the original, there is certainly a loss in avoiding the word *machinofacture*. This is a word of Tarde's special mintage, struck off with all due reserve in a footnote to page 174 of the *Logique Sociale*, and freely used thereafter, often as here, without italicizing, on the assumption that his readers now understand it. But it is as good English as French, and while in both languages the word *manufacture* has lost its literal implication of *handmade*, and embraces machine-made products as well and for the most part, still it was a fine stroke to call attention by this new term to the primitive form of industry, and to emphasize in one word the enormous stride that industry has taken, which, with all its blessings, is at the same time the fundamental cause of the chief socio-economic problem of modern times.

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Die Conchylien der patagonischen Formation. Von H. VON IHERING. Mit 2 Tafeln. *Neuen Jahrbuch für Mineralogie, Geologie und Palæontologie.* Jahrg. 1899. Bd. II. (S. 1–46 Taf. I., II.).

In this paper Dr. von Ihering has made an important addition to the invertebrate paleontology of the Patagonian beds. The paper is based upon a collection of invertebrate fossils recently made by Mr. C. Bicego of the Sao Paulo Museum, from the typical Patagonian beds at the mouth of the Santa Cruz river in southern Patagonia. According to Dr. von Ihering about 50 species are represented in the collection. Among these are nine new to science and some three or four new varieties.

Not the least important features of Dr. von Ihering's paper are the geological questions discussed in it. Following Dr. Ameghino, von Ihering considers the Patagonian and Supra Patagonian (Santa Cruz) beds, as quite distinct and proceeds to set forth at some length the paleontologic and lithologic features which according to him are characteristic of each. Happily we have here for the first time a definite locality given where the Patagonian beds may be observed in their typical development and exhibiting those lithologic and paleontologic features, which, according to Dr. von Ihering, dis-